

AMENDMENTS TO THE CLAIMS

1-15. (Canceled)

16. (Currently Amended) A DNA synthesis reaction composition comprising a DNA synthesis reaction enhancer comprising at least one kind selected from the group consisting of:

1) ~~transition metal complex, comprising at least one atom of a transition element, and at least one ligand and a~~ DNA polymerase;

2) water-soluble acidic macromolecular substances or water-soluble salts thereof, wherein said water-soluble acidic macromolecular substances are one or more substances selected from the group consisting of sulfated-fucose-containing polysaccharides, rhamnam sulfate, heparan sulfate, hyaluronic acid, alginic acid, polyglutamic acids, polyacrylic acids, ~~polyvinyl sulfates, polystyrene sulfates, and DNAs which do not serve as templates for subject DNA synthesis or as primers, wherein said DNA synthesis reaction composition enhances DNA synthesis, and wherein said DNA synthesis reaction composition further comprises a DNA polymerase;~~ and

3) components necessary for DNA synthesis using DNA polymerase.

17. (Canceled)

18. (Currently Amended) A DNA synthesis reaction composition comprising a DNA synthesis reaction enhancer comprising at least one kind selected from the group consisting of:

1) ~~transition metal complex, comprising at least one atom of a transition element, and at least one ligand; and~~ two or more kinds of DNA polymerases;

2) water-soluble acidic macromolecular substances or water-soluble salts thereof, wherein said water-soluble acidic macromolecular substances are one or more substances selected from the group consisting of sulfated-fucose-containing polysaccharides, dextran sulfate, carrageenan, heparin, rhamnam sulfate, dermatan sulfate (chondroitin sulfate B), heparan sulfate, hyaluronic acid, alginic acid, ~~pectin~~, polyglutamic acids, polyacrylic acids, polyvinyl sulfates, polystyrene sulfates, and DNAs which do not serve as templates for subject DNA synthesis or as primers; ~~wherein said DNA synthesis reaction composition enhances DNA synthesis, and wherein said DNA synthesis reaction composition further comprises two or more kinds of DNA polymerases and~~

3) components necessary for DNA synthesis using DNA polymerase,

wherein the two or more kinds of DNA polymerases comprise a DNA polymerase having 3'→5' exonuclease activity, and a DNA polymerase having no 3'→5' exonuclease activity.

19-30. (Canceled).

31. (Previously Presented) A kit for use in *in vitro* DNA synthesis, wherein the kit comprises the DNA synthesis reaction composition of claim 16.

32-33. (Canceled)

34. (Previously Presented) The kit according to claim 31, wherein said DNA polymerase is a thermostable DNA polymerase.

35. (Canceled)

36. (Previously Presented) A kit for use in *in vitro* DNA synthesis, wherein the kit comprises the DNA synthesis reaction composition of claim 18.

37. (Canceled)

38. (Previously Presented) The kit according to claim 36, wherein said DNA polymerase is a thermostable DNA polymerase.

39. (New) A DNA synthesis reaction composition comprising:

- (a) DNA polymerase having 3' → 5' exonuclease activity;
- (b) water-soluble acidic macromolecular substances or water-soluble salts thereof, wherein said water-soluble acidic macromolecular substances are one or more substances selected from the group consisting of dextran sulfate, carrageenan, heparin, dermatan sulfate (chondroitin sulfate B), pectin and polyvinyl sulfates; and
- (c) components necessary for DNA synthesis using DNA polymerase.

40. (New) The DNA synthesis reaction composition according to claim 16, wherein said water-soluble acid macromolecular substances or water-soluble salts thereof are present in the composition at about 0.1 ng to about 5 µg, and wherein the composition is about 50 µl in total volume.

41. (New) The DNA synthesis reaction composition according to claim 16, wherein said DNA polymerase is selected from the group consisting of: pol I-type DNA polymerase, *E. coli* DNA polymerase I, Klenow fragment, *Thermococcus aquaticus*-derived DNA polymerase, α -type DNA polymerase, α -type *Pyrococcus furiosus*-derived DNA polymerase, *Thermococcus litralis*-derived DNA polymerase and *Pyrococcus sp.*-derived DNA polymerase.

42. (New) The DNA synthesis reaction composition according to claim 16, wherein said DNA polymerase is selected from the group consisting of: *E. coli* DNA polymerase I, Klenow fragment, Taq DNA polymerase, VENT DNA polymerase, Pyrobest DNA polymerase, Pfu DNA polymerase I, Pfu DNA polymerase II, Ex-Taq DNA polymerase, KOD dash DNA polymerase, DEEP VENT DNA polymerase, KOD DNA polymerase and LA-Taq DNA polymerase.

43. (New) A kit for use in *in vitro* DNA synthesis, wherein the kit comprises the DNA synthesis reaction composition of claim 39.

44. (New) The kit according to claim 43, wherein said DNA polymerase is a thermostable DNA polymerase.

45. (New) The DNA synthesis reaction composition according to claim 18, wherein said two or more kinds of DNA polymerases are selected from the group consisting of: pol I-type DNA polymerase, *E. coli* DNA polymerase I, Klenow fragment, *Thermococcus aquaticus*-derived DNA polymerase, α -type DNA polymerase, α -type *Pyrococcus furiosus*-derived DNA

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polymerase, *Thermococcus litralis*-derived DNA polymerase and *Pyrococcus sp.*-derived DNA polymerase.